QTYCF8.4.21
5/1/1926

NOT JOINT - CAR.

~~Seattle ...~~

ELECTRIC LINE CROSSING PERMIT (Permanent) **No.** 43440. **R. W. 28** 9-10-25 W

NP 43440

NORTHERN PACIFIC RAILWAY COMPANY, hereinafter called the Railway Company, hereby grants to (b) (6) [redacted] of Seattle, Washington,

hereinafter called the second party, the right to construct, maintain and operate an electric current line with the necessary poles, crossarms, wires, conduits and other fixtures appurtenant thereto across the right of way of the Railway Company along the course described as follows:

Intersecting the center line of the main track of the Railway Company's Lake Washington Belt Line as now constructed in Section 20, Township 24 North, Range 5 East of the Willamette Meridian in King County, Washington, near Quendall station, at a point herein distant 1155 feet southwesterly, measured along said center line, from Mile Post 8 (which mile post is located 2084.5 feet southwesterly, measured along said center line, from the north line of said section).

This permission is granted upon the following terms:

1. The second party will pay a rental of Five and no/100 (5.00) Dollars in advance for the full term hereof, also all taxes and assessments that may be levied or assessed against the improvements.

2. The electric wires and appurtenances shall be constructed and maintained in accordance with specifications contained in Exhibit "A" hereto attached and made a part of this instrument.

3. All cost of construction and maintenance shall be paid by the second party; the Superintendent of Telegraph of the Railway Company will decide what portion, if any, of the work will be done by the Railway Company, and for such portion the second party will pay the Railway Company the estimated cost before the work is done; if the actual cost exceeds the estimate, the second party will pay the additional amount when called upon; if the actual cost is less than the estimate, the Railway Company will repay the surplus.

4. Should the construction or maintenance of the electric line herein contemplated necessitate any change or alteration in the location or arrangement of any other electric wires or appurtenances located upon the right of way of the Railway Company, the cost of such change or alteration will be paid by the second party.

5. The Railway Company shall have the right at any time to judge of the necessity of repairs in the crossing wires or appurtenances and may make written request upon the second party to make such repairs as the Railway Company may deem necessary. If at any time it becomes necessary in the judgment of the Railway Company for reasons of safety or otherwise, to change the location, elevation or method of construction of the crossing wires and appurtenances, such changes will be made promptly by the second party upon request of the Railway Company within thirty days after such request and in such manner as the Railway Company shall direct.

6. The crossing wires shall be used for the sole purpose of conveying electric currents at a potential not to exceed 100 volts.

7. This permit shall not be transferred or assigned by the second party without the written consent of the Railway Company.

8. The second party agrees that the wires and appurtenances and the use of the same for conducting electric current shall not damage at any time the railroad or structures of the Railway Company, or the property of the Western Union Telegraph Company, or any other property upon the right of way, or be a menace to the safety of the Railway Company's operations or any other operations conducted on the right of way. The second party will indemnify and save harmless the Railway Company, the Western Union Telegraph Company, and every other owner of any property upon said right of way, from all loss or damage to property, from all loss or damage from interfering with operation and from injuries to persons occasioned by the wires and appurtenances or the electric current conducted thereon.

9. After the completion of the crossing wires and appurtenances or any subsequent repairs thereof the second party shall remove from the right of way of the Railway Company, to the satisfaction of the Superintendent of Telegraph of the Railway Company, all false work and the like used in the installation or repair work.

10. If the second party at any time shall cease to maintain and operate the said line or shall fail faithfully to perform every agreement of this instrument, the Railway Company may forthwith terminate this permit and may forthwith expel the second party from its premises, and at the end of the permit the second party will restore the premises of the Railway Company to their former state.

11. It is understood by the parties that said pole line will be in danger of injury or destruction by fire or other causes incident to the operation of a railway, and the second party accepts this permit subject to such dangers. It is therefore agreed, as one of the material considerations of this permit, without which the same would not be granted, that the second party assumes all risk of loss, damage or destruction to said pole line without regard to whether such loss be occasioned by fire or sparks from locomotive engines or other causes incident to or arising from the movement of locomotives, trains or cars of any kind, misplaced switches, or in any respect from the operation of a railway, or to whether such loss or damage be the result of negligence or misconduct of any person in the employ or service of the Railway Company, or of defective appliances, engines or machinery, and the second party shall save and hold harmless the Railway Company from all such damage, claims and losses.

12. In addition to complying with the attached specifications, the wires hereby permitted shall be constructed to comply with the laws of the State of Washington covering electrical construction.

IN WITNESS WHEREOF the parties hereto have executed these presents this 1st day of May 1926.

NORTHERN PACIFIC RAILWAY COMPANY,

By J. L. Watson
Right of Way Commissioner.

Witnesses to Signature of Permittee:

(b) (6) [redacted]

Noted on Plat.

Form R W 61 9-18-25 1M RP

Northern Pacific Railway Company

EXHIBIT "A."

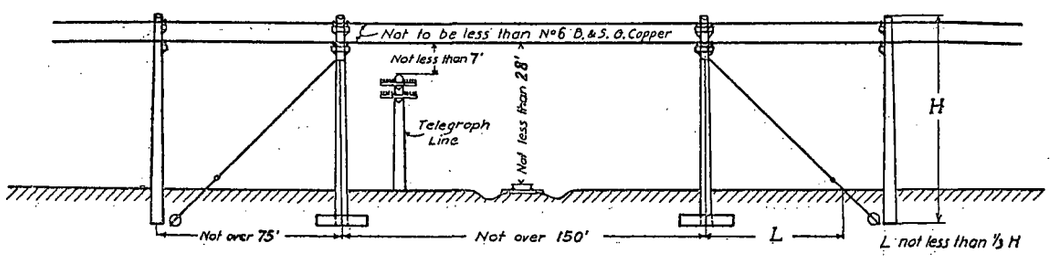
SPECIFICATIONS FOR OVERHEAD CROSSING OF ELECTRIC WIRES CARRYING LESS THAN 5,000 VOLTS.

These specifications cover the construction and maintenance of overhead electric wires crossing over or parallel to railway right of way, tracks or lines of wires, where the voltage on the wires is less than 5,000 volts and the wires are used for transmission of electric power, lights or similar purposes.

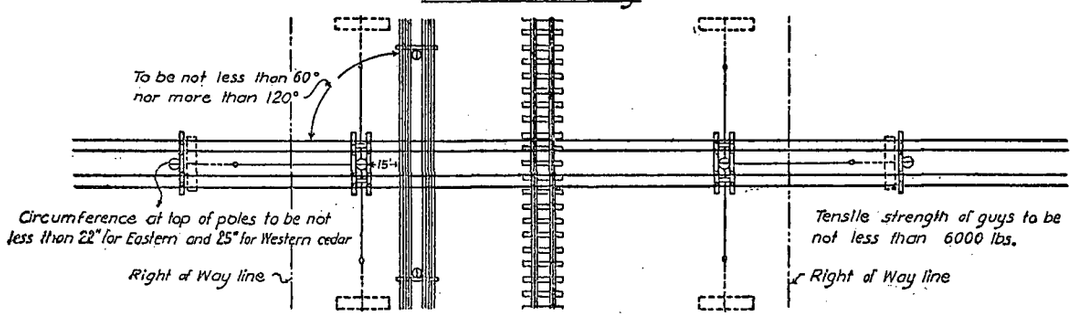
GENERAL PLAN OF CONSTRUCTION

The general plan of construction of the electric line crossing shall be as indicated below.

Elevation of Crossing



Plan of Crossing



1. Location of Poles.

(a) The poles supporting the crossing span shall be placed outside of the Railway Company's right of way where practicable, but in no case shall the distance between the poles be over one hundred and fifty (150) feet, unless specially authorized by the Superintendent of Telegraph of the Railway Company. When wood poles are used, the span immediately adjacent to the poles of the crossing span of the tracks or pole lines on the railroad right of way shall not be over seventy-five (75) feet.

(b) The poles supporting the crossing span and the adjoining spans on each side shall be in straight line and shall cross the railroad right of way as near at right angles as practicable. In no case shall the angle between the electric line and the Railway Company's tracks or pole line be less than sixty (60) degrees unless specially authorized by the Superintendent of Telegraph of the Railway Company.

(c) The poles shall be located as far away from inflammable material or structures as is practicable. Also the poles shall be placed so that they will not be nearer than fifteen (15) feet from the nearest wire of any other pole line on the Railroad right of way.

(d) Side clearance of any poles of the electric line shall not be less than twelve (12) feet from the nearest rail of main line track nor less than six (6) feet from the nearest rail of sidings.

(e) Where the electric line must necessarily be constructed higher than and parallel to the telegraph line, and separated from the latter by a distance less than the height of the electric line poles, the construction shall conform to the requirements for the cross-over span as hereinafter specified. The requirements shall also apply

to each span next adjacent to the portion above the telegraph line, unless the distance from the nearest telegraph wire to the topmost wire on the electric line poles at the end of the over-built section is greater than one and one-half (1½) times the height of the topmost electric line wire from the ground.

2. Position and Clearance of Wires.

(a) The electric wires shall cross over the telegraph, telephone, or any other wires on pole lines on the railway right of way.

(b) The electric wires shall not be less than twenty-eight (28) feet above the rail or any part of the railroad right of way, under the most unfavorable conditions of temperature and loading.

(c) The electric wires shall clear any existing wires on pole lines on the railroad right of way, under the most unfavorable conditions of temperature and loading, by not less than seven (7) feet. The telegraph cross arms may be spaced fifteen (15) inches on centers at crossings in order to allow poles of minimum height to be used.

DETAILS OF MATERIAL AND CONSTRUCTION REQUIRED.

3. General.

(a) It is desired to so construct the crossing of the electric line wires so that each portion of the line shall have sufficient strength to resist the maximum mechanical stresses to which it may be subjected, due allowance being made for a factor of safety suited to the material used.

(b) Obviously the maximum mechanical loads upon the construction of electric line will usually occur when the wires are coated with ice and subjected to a maximum wind velocity at right angles to the line at the minimum temperature.

(c) The maximum stresses in construction of the electric line shall be computed on the basis of a wind pressure of twenty (20) pounds per square foot of plane area, or twelve (12) pounds per square foot of projected area for cylindrical surfaces. These values are based upon a maximum actual wind velocity of seventy (70) miles per hour and are to be used in connection with the following coincident conditions:

1. The maximum coating of ice one-half (½) inch in thickness.
2. A minimum temperature of Zero (0) degrees Fahrenheit.

NOTE: In a few sections in the territory of the Northern Pacific Railway, the minimum temperature of Zero (0) degrees and the above ice formation are not encountered. The construction of the electric lines in such regions may, with the approval of the Superintendent of Telegraph, be modified to meet the local climatic conditions. In no case shall the minimum temperature be taken above thirty (30) degrees Fahrenheit.

(d) The following sizes and strengths of material are figured and specified on the assumption of the electric wires and structures being subjected at the crossing of the railroad right of way with mechanical loads and stresses as outlined above and that the wires do not exceed in number or size as hereinafter specified under Paragraph 11-A.

(e) Every facility for the inspection of material and workmanship shall be furnished by the company constructing the electric line. All work shall be subject to the inspection and approval of the Superintendent of Telegraph of the Railway Company, and his interpretation of the drawings and specifications and his decisions as to the quantity and quality of the work shall be final.

4. Poles.

The poles supporting the electric wires across the railroad right of way shall be either wood, steel or reinforced concrete. If steel or reinforced poles are used, they shall conform to specifications satisfactory to the Superintendent of Telegraph of Railway Company.

When wood poles are used, they shall conform to the following specifications:

1. A factor of safety of six (6) shall be used in connection with figuring on the strength of the poles.
2. Eastern or Western cedar may be used.
3. Poles shall be selected timber, peeled, free from defects which would decrease their strength or durability, and, in general, conform to the Northern Pacific Railway Company's specifications.
4. No Eastern cedar pole shall be used having a circumference at the top of less than twenty-two (22) inches and circumference measurement for the different lengths of poles less than shown in the following table:

Length of Poles	Circumference Six (6) Feet From Butt
30 Feet	36 Inches
35 "	38 "
40 "	43 "
45 "	47 "
50 "	50 "
55 "	53 "
60 "	56 "

5. No Western cedar pole shall be used having a circumference at the top of less than twenty-five (25) inches and circumference measurement for the different lengths less than shown in the following table:

Length of Poles	Circumference Six (6) *Feet From Butt*
30 Feet	34 Inches
35 "	36 "
40 "	38 "
45 "	40 "
50 "	42 "
55 "	44 "
60 "	46 "
65 "	48 "

5. Setting Poles.

(a) Wood poles shall be set in the ground to the depths given in the following table:

Length of Pole	Depth in Ground	Depth in Solid Rock
30 Feet	5½ Feet	3½ Feet
35 "	6 "	4 "
40 "	6 "	4 "
45 "	6½ "	4½ "
50 "	7 "	4½ "
55 "	7½ "	5 "
60 "	8 "	5 "
65 "	8½ "	6 "

(b) Wood poles shall not be used where inflammable materials are situated within a distance near enough to cause an appreciable fire hazard to the poles.

(c) When wood poles are employed, surrounding underbrush and grass must be removed for a sufficient distance to avoid fire hazard.

(d) Great care shall be taken in setting poles at crossings to secure firm foundations.

(e) Exposure to washouts shall be avoided.

(f) Poles shall not be set on sloping banks when other locations are practicable. Where poles are necessarily set on sloping banks they shall be well reinforced by cribbing.

(g) In sandy or swampy soil concrete foundations shall be provided. Each foundation shall contain not less than two (2) cubic yards of concrete.

(h) Concrete shall not be leaner than one (1) part of cement to two and one-half (2½) parts of sand to five (5) parts of broken stone. An equivalent gravel concrete may be used. Cement shall be Portland Cement conforming to the standard specifications of the American Society for Testing Materials. Sand shall be clean and sharp. All concrete shall be mixed and placed thoroughly wet.

6. Pole Fittings.

The top of each pole shall be roofed. All gains shall be one-half (½) inch deep and of proper width for cross arms used. The center of the upper gain shall be at least ten (10) inches below the apex of the roof.

7. Guys.

(a) The factor of safety used in connection with guys shall be three (3).

(b) Wood poles supporting the crossing spans shall be side guyed in both directions and be head guyed away from the crossing span. When there are from five (5) to eight (8) wires, the poles of the crossing span shall be double side guyed or guy strand used having at least twice the breaking strength specified in Paragraph 7-d.

(c) Braces may be used on the poles instead of guys, but the length shall be not less than ten (10) feet shorter than the poles, in connection with which the braces are used. The butt of each brace shall be set at least six (6) feet in the ground and when used as both a push and a pull brace, a cross log at least five (5) feet long and not less than eight (8) inches in diameter shall be attached to the butt of the brace by means of a cross arm bolt.

(d) Guys shall be galvanized or copper covered stranded steel cable, having a breaking strength not less than six thousand (6,000) pounds or galvanized rolled rods of equivalent tensile strength. All guys shall be anchor guys and shall be attached to galvanized anchor rods at least five-eighths (⅝) inches in diameter and eight (8) feet long.

(e) The anchor rods shall be fastened to anchor logs. All excavations for anchor logs shall be six (6) feet deep where practicable. When not practicable to obtain this depth, excavation shall be made not less than four (4) feet deep. This size of the anchor log shall correspond to the depth of excavation according to the following table:

	Dimension of Anchor Logs	
Depth of Excavation	Length	Diameter
6 Feet	5 Feet	10 Inches
	7 "	7 "
5 "	5 "	16 "
	8 "	10 "
4 "	5 "	23 "
	8 "	14 "
	10 "	12 "

The length and width of excavation shall be made as small as possible, especially at the surface of the ground.

(f) In general, the method of anchoring, location for anchors and depth and character of setting shall be such as to render effective the full strength of the guy. Poles having a pull greater than twelve (12) inches shall be guyed. Guys shall be placed at a distance from the pole not less than one-third (⅓) the length of the pole. Guys shall be attached to the pole so as to be below the electric wires and clear the same by at least two (2) feet. Guys shall be attached to guy rods by means of thimbles and three (3) bolt guy clamps. The end of the guy attached to the pole shall be wrapped twice around the pole and fastened with a three (3) bolt guy clamp, the wrapping held in place on the back of the pole by the use of staples or their equivalent.

(g) Strain insulators are not required, but if these should be placed in guys, each strain insulator shall have a breaking strength not less than that of the guy in which it is placed. Every guy which passes over or under any electric wires, other than those carried upon the guyed poles, shall be so placed and maintained as to provide at all times a clearance of not less than two (2) feet between the guy and such electric wire.

8. Cross Arms.

(a) Wood cross arms shall be at least three and three-quarters (3¾) inches by four and three-quarters (4¾) inches cross section of the proper length so as to provide the spacing of wires as specified under "Wires." No wood cross arms shall have more than eight (8) wires of size greater than No. 6 B. & S. gauge and more than four (4) wires of size greater than No. 00. Double cross arms shall be used on each of the poles of crossing span and on poles on railroad right of way on which there is a pull of more than ten (10) feet. Each end of double cross arms shall be provided with a five-eighths (⅝) inch space bolt or wood blocking between the arms securely fastened by a one-half (½)inch bolt through the cross arms and block.

(b) Cross arms shall be attached to poles by means of cross arm bolts having a diameter of five-eighths (⅝) inches of proper length in order to extend through the pole and cross arm, providing necessary length for nuts and washers.

(c) Cross arm braces having a cross section of at least one-fourth (¼) inch by one and one-fourth (1¼) inches and twenty-eight (28) inches long shall be used and fastened to the poles by lag screws having a diameter of at least one-half (½) inch and at least three and one-half (3½) inches long. Cross arm braces shall be attached to the cross arms by the use of carriage bolts having a diameter of at least three-eighths (⅜) of an inch and of the proper length to correspond with the arms used.

All cross arm fittings, as cross arm bolts, braces, lag screws, carriage bolts, etc., shall be galvanized to stand the four (4) immersion galvanizing test.

9. Pins.

(a) Steel pins shall be used in all cases and shall have a factor of safety of three (3).

(b) The cross section of the pins used shall be at least five-eighths (⅝) of an inch.

10. Insulators.

(a) Porcelain insulators shall be used in all cases where the voltage on the wires exceeds seven hundred (700) volts and shall be sufficiently strong so that, when mounted, they will withstand without injury twice the maximum mechanical stress to which they will be subjected when the line conductors are attached to them. Glass insulators will be satisfactory for voltages less than seven hundred (700) volts.

(b) Insulators shall not flash over at four times the normal working voltage, under a precipitation of water of one-fifth (1-5)of an inch per minute at an inclination of forty-five (45) degrees to the axis of the insulator.

(c) Test voltage shall be determined by transformer ratio.

11. Wires.

(a) **Kind and Size.**

Solid or stranded wires may be used up to and including No. 00 in size, above No. 00 in size the conductors shall be stranded in the crossing span and other spans covered by these specifications. When the conductors are stranded they shall contain not less than seven (7) component wires. The conductors used shall be of copper or aluminum. The minimum sizes of wires used shall be not less than No. 6 B. & S. guage copper and No. 3 B. & S. guage aluminum. There shall be no joints in the conductors in the spans covered by these specifications. Cases where there are more than eight (8) No. 00 wires, or the size of the wire is greater than No. 00, will be considered special and the Superintendent of Telegraph will supply additional details as to the necessary strength of structure, in order to carry the additional load.

(b) **Separation of Wires.**

The separation of the conductors for spans not exceeding one hundred and fifty (150) feet shall not be less than twelve (12) inches.

For spans exceeding one hundred and fifty (150) feet, the pin spacing shall be increased, depending on the length of the span and the sag of the conductors.

The clearance in any direction between the conductors nearest the pole shall not be less than nine (9) inches.

(c) **Sag.**

The wires shall be put up at the crossing span and at the spans on either side and adjacent to the crossing span with proper sags as shown in Northern Pacific Railway Company's standard table of sags for different span lengths and kinds and sizes of wires.

(d) **Attaching Wires.**

The method of attaching the conductors to the insulators shall be such as to hold the wire under maximum loading to the insulators in case of shattered insulators, or wires broken or burned at insulators without allowing an amount of slip which would materially reduce the clearance specified in Paragraph 2-C.

12. MAINTENANCE.

Poles, cross arms, insulators, wires, guys and other parts and material used in the structure of the wire crossing over the right of way of the Railway Company shall be periodically inspected and necessary repairs promptly made by the company to whom the pole lines and wires belong.

Wood poles and cross arms shall be replaced before their strength falls below two-thirds (2-3) of the original strength.

Surrounding underbrush or grass or any inflammable material must be kept removed from wood poles for a sufficient distance so as to reduce the fire hazard to a minimum.

The guys and anchors shall be maintained so that the guys are kept taut and serve the purpose for which they are intended.

The wires shall be kept up to the proper sag.

Northern Pacific Railway Company

STANDARD TABLES FOR SAGS OF DIFFERENT KINDS AND SIZES

OF

COPPER AND ALUMINUM WIRES

Temperature Coefficients.

Copper ..... .0000096
Aluminum ..... .0000128

MINIMUM SAGS FOR STRANDED HARD-DRAWN BARE COPPER WIRES

Span in Feet

No. 4/0 B. & S.

Temp. F. or less	100	125	150	200	250	300	400	500	600
	Sags								
	In.	In.	In.	In.	In.	In.	Feet	Feet	Feet
—20	2	3	5	8	13	20	3.5	6	10
0	2	4	5	9	14	22	3.5	6.5	10.5
20	3	4	6	10	16	24	4	7	11.5
40	3	4	6	11	18	27	4.5	8	12
60	3	5	7	13	20	31	5	8.5	13
80	4	6	8	15	24	35	5.5	9	13.5
100	4	7	10	17	27	40	6	10	14.5
120	5	8	12	20	31	46	7	10.5	15

Span in Feet

No. 3/0 B. & S.

Temp. F. or less	100	125	150	200	250	300	400	500	600
	Sags								
	In.	In.	In.	In.	In.	In.	Feet	Feet	Feet
—20	2	3	5	8	13	21	4	7	12
0	2	4	5	9	15	23	4	7.5	12.5
20	3	4	6	10	17	25	4.5	8.5	13.5
40	3	4	6	12	19	29	5	9	14
60	3	5	7	13	22	33	6	9.5	15
80	4	6	8	15	25	38	6.5	10.5	15.5
100	4	7	10	18	29	43	7	11	16
120	5	8	12	21	34	49	7.5	12	17

Span in Feet

No. 2/0 B. & S.

Temp. F. or less	100	125	150	200	250	300	400	500	600
	Sags								
	In.	In.	In.	In.	In.	In.	Feet	Feet	Feet
—20	2	3	5	9	14	23	4.5	9	15
0	2	4	5	10	16	26	5	9.5	15.5
20	3	4	6	11	18	29	5.5	10	16
40	3	4	7	12	21	33	6	11	17
60	3	5	7	14	24	37	6.5	11.5	17.5
80	4	6	9	16	28	43	7	12	18
100	5	7	10	19	32	48	8	12.5	18.5
120	6	9	12	23	37	54	8.5	13.5	19.5

Span in Feet

No. 0 B. & S.

Temp. F. or less	100	125	150	200	250	300	400	500	600
	Sags								
	In.	In.	In.	In.	In.	Feet	Feet	Feet	Feet
—20	2	3	5	9	16	2.5	5.5	11.5	18.5
0	2	4	5	10	18	2.5	6.5	12	19
20	3	4	6	11	21	3	7	12.5	19.5
40	3	5	7	13	24	3.5	7.5	13	20
60	3	5	8	15	27	4	8	14	20.5
80	4	6	9	18	32	4.5	8.5	14.5	21.5
100	5	7	11	21	37	5	9	15	22
120	6	9	13	25	42	5	9.5	15.5	22.5

MINIMUM SAGS FOR SOLID HARD-DRAWN BARE COPPER WIRES

Span in Feet

No. 1 B. & S.

Temp. F. or less	100	125	150	200	250	300	400	500	600
	Sags								
	In.	In.	In.	In.	In.	Feet	Feet	Feet	Feet
—20	2	4	5	10	19	3	8	14.5	23
0	3	4	6	11	22	3.5	8.5	15	23.5
20	3	4	6	13	25	4	9	16	24
40	3	5	7	15	30	4.5	9.5	16	24.5
60	4	6	8	18	34	5	10	17	25
80	4	7	10	21	39	5.5	10.5	17	25.5
100	5	8	12	25	44	6	11	18	26
120	6	10	16	30	49	6	11.5	18	26.5

Span in Feet

No. 2 B. & S.

Temp. F. or less	100	125	150	200	250	300	400	500	600
	Sags								
	In.	In.	In.	In.	In.	Feet	Feet	Feet	Feet
—20	2	4	5	12	25	4	10.5	18.5	29
0	3	4	6	14	29	4.5	11	19	29.5
20	3	5	7	16	33	5	11.5	19.5	30
40	3	5	8	19	39	5.5	12	20	30.5
60	4	6	10	23	43	6.0	12.5	20.5	31
80	4	7	12	27	48	6.5	13	21	31
100	5	9	14	31	53	7	13	21.5	31.5
120	7	11	18	35	58	7.5	13.5	22	32

Span in Feet

No. 3 B. & S.

Temp. F. or less	100	125	150	200	250	300	400	500	600
	Sags								
	In.	In.	In.	In.	Feet	Feet	Feet	Feet	Feet
—20	3	4	6	17	3	6	14	24	37.5
0	3	4	7	20	3.5	6.5	14.5	24.5	37.5
20	3	5	8	23	4	7	15	25	38
40	3	6	10	27	4.5	7.5	15	25	38
60	4	7	12	30	5	8	15.5	25.5	38.5
80	5	9	14	35	5.5	8.5	16	26	39
100	6	11	17	39	5.5	8.5	16.5	26	39
120	8	14	22	44	6	9	16.5	26.5	39.5

Span in Feet

No. 4 B. & S.

Temp. F. or less	100	125	150	200	250	300	400	500	600
	Sags								
	In.	In.	In.	In.	Feet	Feet	Feet	Feet	Feet
—20	3	4	8	25	5	9	18	31	46
0	3	5	9	29	5.5	9	18.5	31.5	46
20	3	6	11	33	6	9.5	19	31.5	46.5
40	4	7	13	38	6.5	10	19	32	46.5
60	4	9	16	42	6.5	10	19.5	32.5	47
80	5	11	19	46	7	10.5	19.5	32.5	47.5
100	7	13	23	50	7.5	11	20	32.5	47.5
120	9	16	27	54	7.5	11	20.5	33	48

Span in Feet

No. 6 B. & S.

Temp. F. or less	100	125	150	200	250	300	400
	Sags						
	In.	In.	In.	Feet	Feet	Feet	Feet
—20	3	8	22	5.5	10	15	30
0	4	10	26	6.0	10	15	30
20	5	13	30	6	10.5	15.5	30.5
40	6	16	33	6	10.5	15.5	30.5
60	8	19	36	6.5	11	16	31
80	10	22	39	6.5	11	16	31
100	13	25	41	7	11.5	16.5	31
120	16	28	44	7	11.5	16.5	31.5

MINIMUM SAGS FOR STRANDED BARE ALUMINUM WIRE

Span in Feet

No. 4/0 B. & S.

Temp. F. or less	80	100	125	150	200	250	300	400	500	600
	Sags									
	In.	In.	In.	In.	In.	Feet	Feet	Feet	Feet	Feet
—20	1	2	3	5	11	2.5	5	11	19	29
0	1	2	3	6	15	3	5.5	12	19.5	29.5
20	2	3	5	8	21	3.5	6	12.5	20.5	30
40	2	4	7	11	27	4.5	7	13	21	31
60	4	6	11	17	34	5	7.5	13.5	21.5	31.5
80	6	10	16	22	41	5.5	8	14	22	32
100	10	14	24	27	46	6	8.5	14.5	22.5	33
120	13	18	25	32	52	6.5	9	15	23	33.5

Span in Feet

No. 3/0 B. & S.

Temp. F. or less	80	100	125	150	200	250	300	400	500	600
	Sags									
	In.	In.	In.	In.	In.	Feet	Feet	Feet	Feet	Feet
—20	1	2	3	5	12	3	5.5	13	22	33.5
0	1	2	4	6	17	3.5	6.5	13.5	22.5	34
20	2	3	5	8	24	4.5	7	14	23	34.5
40	2	4	7	12	31	5	7.5	14.5	23.5	35
60	3	5	11	18	38	5.5	8	15	24	35.5
80	6	9	16	23	43	6	8.5	15.5	24.5	36
100	10	13	20	29	49	6.5	9	16	25	36.5
120	13	17	25	33	54	7	9.5	16.5	25.5	37

Span in Feet

No. 2/0 B. & S.

Temp. F. or less	80	100	125	150	200	250	300	400	500	600
	Sags									
	In.	In.	In.	In.	Feet	Feet	Feet	Feet	Feet	Feet
—20	1	2	3	6	2	5	8.5	16.5	28	42
0	2	2	4	8	2.5	5.5	9	17	28.5	42.5
20	2	3	6	12	3	6	9	17.5	29	43
40	2	4	9	18	3.5	6.5	9.5	18	29.5	43
60	4	7	14	24	4	7	10	18.5	29.5	43.5
80	7	12	19	29	4.5	7	10.5	19	30	44
100	10	16	24	33	5	7.5	11	19.5	30.5	44.5
120	14	19	28	38	5.5	8	11.5	20	31	44.5

Span in Feet

No. 0 B. & S.

Temp. F. or less	80	100	125	150	200	250	300	400	500
	Sags								
	In.	In.	In.	In.	Feet	Feet	Feet	Feet	Feet
—20	1	2	4	9	3.5	7	10.5	21	36.5
0	2	3	6	14	4	7	11	21.5	36.5
20	2	4	8	20	4.5	7.5	11.5	22	37
40	3	6	13	26	5	8	12	22	37
60	5	10	18	31	5	8.5	12	22.5	37.5
80	8	14	23	35	5.5	8.5	12.5	23	38
100	12	18	27	39	6	9	13	23	38
120	15	21	31	43	6	9.5	13.5	23.5	38.5

Span in Feet

No. 1 B. & S.

Temp. F. or less	80	100	125	150	200	250	300	400	500
	Sags								
	In.	In.	In.	In.	Feet	Feet	Feet	Feet	Feet
—20	1	3	7	20	5	9	13.5	26.5	42.5
0	2	4	11	25	5.5	9	14	27	43.5
20	2	5	16	30	5.5	9.5	14.5	27	44
40	4	9	21	34	6	10	14.5	27.5	44
60	7	13	25	39	6.5	10	15	27.5	44.5
80	10	18	29	42	6.5	10.5	15.5	28	44.5
100	14	21	32	45	7	11	15.5	28	45
120	17	24	36	49	7	11	16	28.5	45

MINIMUM SAGS FOR COVERED SOLID SOFT COPPER WIRES

Span in Feet

No. 4 B. & S.

Temp. F.	60	80	100	125	150	200	250	300
	Sags							
	In.	In.	In.	In.	Feet	Feet	Feet	Feet
—20	3	7	17	35	5	9.5	16	23.5
0	3	8	19	37	5	10	16	24
20	4	10	21	39	5	10	16	24
40	5	12	23	41	5.5	10	16.5	24
60	6	14	25	43	5.5	10	16.5	24.5
80	8	16	27	45	5.5	10.5	16.5	24.5
100	10	17	29	46	6	10.5	16.5	24.5
120	11	19	30	48	6	10.5	17	24.5

Span in Feet

No. 6 B. & S.

Temp. F.	60	80	100	125	150	200	250
	Sags						
	In.	In.	In.	Feet	Feet	Feet	Feet
—20	7	21	38	5.5	8.5	16	26
0	9	22	40	6	8.5	16	26.5
20	10	24	41	6	8.5	16	26.5
40	12	25	42	6	9	16	26.5
60	13	26	43	6	9	16	26.5
80	14	27	45	6	9	16.5	26.5
100	15	29	46	6.5	9	16.5	26.5
120	17	30	47	6.5	9	16.5	27

NP 43440

Re Permit for Puget Sound Power & Light Co's. overhead electric wire crossing at MP 7+3581, near Hazelwood.

Seattle, Washington,
December 30, 1931.

17799

Mr. J. L. Watson:

Referring to your letter dated December 5th in reply to mine of December 1st regarding wire crossing of the Puget Sound Power & Light Co. on Pacific Telephone & Telegraph Co's. poles at MP 7+3681 on Lake Washington Belt Line near Hazelwood.

This matter was referred to the Puget Sound Power & Light Co. by Mr. Bartles' office and the Power Co has replied that this crossing is covered by Lease No. 43440 reading in favor of (b) (6)

D

District Engineer.

1/6

NORTHERN PACIFIC RAILWAY DEC 12 1931

10799

Seattle, Wash.

Dec. 8, 1931

Puget Sound Power & Light Co.

Seattle, Washington

Gentlemen:

A recent check of our tracks discloses the fact that at MP 7 plus 3581 for Lake Washington Belt Line near Hazelwood, you have two electric light wires strung on two Pacific Telephone & Telegraph Company's poles.

We are unable to locate where this crossing is covered by the usual lease. Will you kindly make application for same in the regular manner?

Yours truly,

F. R. Bartles
Superintendent

JLW
Copy-GIH

1/6

St. Paul, Minnesota
December 5, 1931

Mr. G. I. Hayward
District Engineer
Seattle, Washington

I am in receipt of your letter of December 1 enclosing eight prints of Assistant Engineer's sketch showing location of overhead wire crossing of the Pacific Telephone and Telegraph Company on the Lake Washington Belt Line near Hazelwood at mile post 7 plus 3581.

In reply to the second paragraph of your letter in reference to the electric light wires belonging to the Puget Sound Power & Light Company attached to the same poles as the telephone crossings: We have no record in this office of having granted a permit to either the Pacific Telephone andTTelegraph Company or the Puget Sound Power & Light Company. We did grant permit No. 43440 to Ella B. Erback for an electric line crossing at a point 1155 feet southwesterly from mile post 8 on about 49 feet northeasterly from the point of crossing shown on the blueprint enclosed with your letter.

I assume application for permit in favor of the Pacific Telephone and Telegraph Company, as well as the Puget Sound Power & Light Company, is being sent through the usual channel for approval.

FWJ K

Right of Way Commissioner

Wires of The Pacific Tel. & Tel. Co. covered by General Xing Contract 27737-156

Re: Hazelwood (near) Pacific Tel.
& Tel. Co's wire crossing at
M.P. 7+3581.

NORTHERN PACIFIC RAILWAY
DEC 4 1931
RIGHT OF WAY DEPT.
ST. PAUL

Seattle, Washington,
December 1, 1931.

Mr. J. L. Watson:

Attached are eight prints of Assistant Engineer's sketch showing location of overhead wire crossing of the Pacific Telephone & Telegraph Company on Lake Washington Belt Line near Hazelwood at M.P. 7+3581. The sketch indicates actual location of crossing installed, obtained by field survey. The prints are furnished for the purpose of attaching to copies of permit when issued.

You will note sketch indicates that there are two electric light wires belonging to the Puget Sound Power & Light Company on same poles as the telephone crossing and were placed in 1927. We have no record of permit having been issued for the wires of the Power Company, but it is possible a permit was issued and copy not furnished this office. Will you please advise.

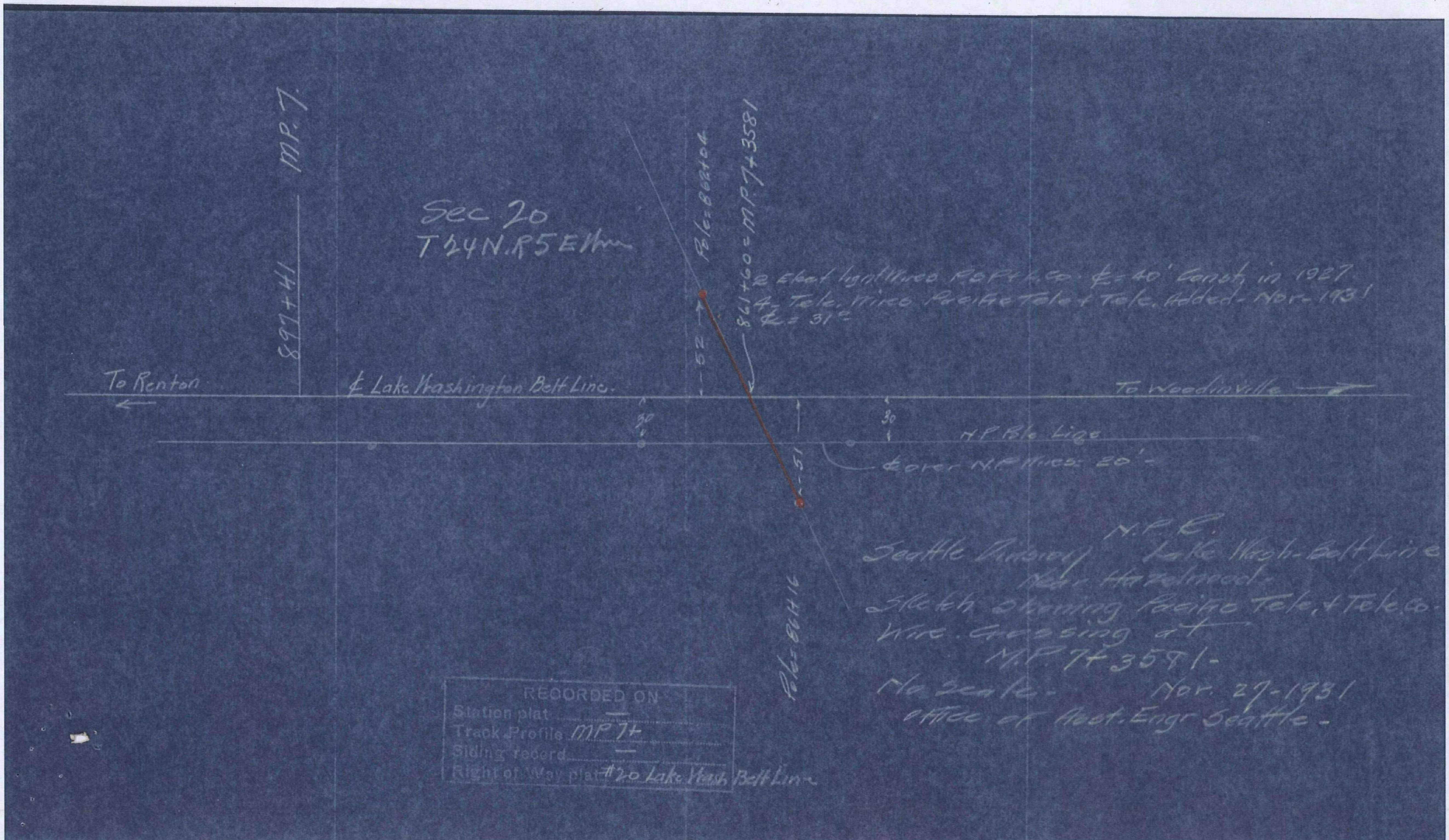
c.c.
AFS

HDD/w

G. A. Hayward
District Engineer.

no record of permit to either of above companies at this point but Perm. Permit 43440 to Bell & B. Sorbeck covers an elec. line Xing 1155 ft. [illegible] from M.P. 8 which is apparently the same location

EMW 12/4/31


M.P. 7.
897+41
Sec 20
T 24 N. R 5 E W.M.
Pole = 868+04
861+60 = M.P. 7 + 3581
2 Elect. light Wires P.S.P. & L. Co. ℄ = 40' Const. in 1927.
4 Tele. Wires Pacific Tele. & Tele. Added - Nov. 1931
℄ = 31'
52
To Renton
℄ Lake Washington Belt Line.
To Woodinville
30
30
N.P. Pole Line
51
℄ over N.P. Wires: 20'
Pole = 86+16
N.P. R.
Seattle Division Lake Wash. Belt Line
Near Hazelwood.
Sketch Showing Pacific Tele. & Tele. Co. Wire. Crossing at
M.P. 7 + 3591 -
No Scale - Nov. 27 - 1931
Office of Asst. Engr Seattle -
RECORDED ON
Station plat —
Track Profile MP 7+
Siding record —
Right of Way plat #20 Lake Wash. Belt Line

NORTHERN PACIFIC RAILWAY COMPANY

St. Paul, Minn.,
June 12, 1926.

MR. H. A. CLIFFORD,
Treasurer.

Herewith check for $5, being the initial payment named in permanent permit No. 43440 in favor of (b) (6) for electric light line crossing near Quendall, Wash. The $5 is in payment in full, there being no annual rental under this permit.

FWJ B
enc.

Right of Way Commissioner.

cc - F. W. Sweney.

Seattle, Wash
June 1, 1926

Mr. J. L. Watson

I enclose herewith permit #43440 in favor of (b) (6) which has been properly signed and her check for $5.00 is attached.

J R Bartlett
Superintendent

NORTHERN PACIFIC RAILWAY COMPANY

St. Paul, Minn.,
April 30, 1926.

Mr. F. R. Bartles,
Superintendent,
Seattle, Washington.

Herewith in duplicate permanent permit No. 43440 in favor of Mrs. (b) (6) of Seattle, Wash., for permission to place an electric light line crossing near Quendall, Wash. Please secure execution of the permit and arrange to collect the consideration of $5 specified in paragraph one and remit it to this office together with the executed permit.

FWJ B
enc.

Right of Way Commissioner.

ELECTRIC LINE CROSSING PERMIT ~~(Permanent)~~ NOT JOINT CAR. No. 43440 R. W. 28 9-10-25 W

NORTHERN PACIFIC RAILWAY COMPANY, hereinafter called the Railway Company, hereby grants to (b) (6) [redacted] of Seattle, Wn. hereinafter called the second party, the right to construct, maintain and operate an electric current line with the necessary poles, crossarms, wires, conduits and other fixtures appurtenant thereto across the right of way of the Railway Company along the course described as follows:

a crossing of the ℄ of the main track of the Ry Co's Lake Wn. Belt Line as now constructed in Sec. 20 T24N-R5E of the W.M. in King Co, Wn, near Quendall Sta. at a point therein dist. 155 ft. s-w-ly, meas. along said ℄, from M.P. 8 (which M.P. is located 2984.5 ft. s-w-ly meas. along said ℄, from the north line of said Sec.)

O.K.

This permission is granted upon the following terms:

1. The second party will pay a rental of $5.00 in advance for the full term hereof, also all taxes and assessments that may be levied or assessed against the improvements.

2. The electric wires and appurtenances shall be constructed and maintained in accordance with specifications contained in Exhibit "A" hereto attached and made a part of this instrument.

3. All cost of construction and maintenance shall be paid by the second party; the Superintendent of Telegraph of the Railway Company will decide what portion, if any, of the work will be done by the Railway Company, and for such portion the second party will pay the Railway Company the estimated cost before the work is done; if the actual cost exceeds the estimate, the second party will pay the additional amount when called upon; if the actual cost is less than the estimate, the Railway Company will repay the surplus.

4. Should the construction or maintenance of the electric line herein contemplated necessitate any change or alteration in the location or arrangement of any other electric wires or appurtenances located upon the right of way of the Railway Company, the cost of such change or alteration will be paid by the second party.

5. The Railway Company shall have the right at any time to judge of the necessity of repairs in the crossing wires or appurtenances and may make written request upon the second party to make such repairs as the Railway Company may deem necessary. If at any time it becomes necessary in the judgment of the Railway Company for reasons of safety or otherwise, to change the location, elevation or method of construction of the crossing wires and appurtenances, such changes will be made promptly by the second party upon request of the Railway Company within thirty days after such request and in such manner as the Railway Company shall direct.

6. The crossing wires shall be used for the sole purpose of conveying electric currents at a potential not to exceed 100 volts.

7. This permit shall not be transferred or assigned by the second party without the written consent of the Railway Company.

8. The second party agrees that the wires and appurtenances and the use of the same for conducting electric current shall not damage at any time the railroad or structures of the Railway Company, or the property of the Western Union Telegraph Company, or any other property upon the right of way, or be a menace to the safety of the Railway Company's operations or any other operations conducted on the right of way. The second party will indemnify and save harmless the Railway Company, the Western Union Telegraph Company, and every other owner of any property upon said right of way, from all loss or damage to property, from all loss or damage from interfering with operation and from injuries to persons occasioned by the wires and appurtenances or the electric current conducted thereon.

9. After the completion of the crossing wires and appurtenances or any subsequent repairs thereof the second party shall remove from the right of way of the Railway Company, to the satisfaction of the Superintendent of Telegraph of the Railway Company, all false work and the like used in the installation or repair work.

10. If the second party at any time shall cease to maintain and operate the said line or shall fail faithfully to perform every agreement of this instrument, the Railway Company may forthwith terminate this permit and may forthwith expel the second party from its premises, and at the end of the permit the second party will restore the premises of the Railway Company to their former state.

11. It is understood by the parties that said pole line will be in danger of injury or destruction by fire or other causes incident to the operation of a railway, and the second party accepts this permit subject to such dangers. It is therefore agreed, as one of the material considerations of this permit, without which the same would not be granted, that the second party assumes all risk of loss, damage or destruction to said pole line without regard to whether such loss be occasioned by fire or sparks from locomotive engines or other causes incident to or arising from the movement of locomotives, trains or cars of any kind, misplaced switches, or in any respect from the operation of a railway, or to whether such loss or damage be the result of negligence or misconduct of any person in the employ or service of the Railway Company, or of defective appliances, engines or machinery, and the second party shall save and hold harmless the Railway Company from all such damage, claims and losses.

Wm. Clause

IN WITNESS WHEREOF the parties hereto have executed these presents this 1 day of May 1926

NORTHERN PACIFIC RAILWAY COMPANY,

By ....
Right of Way Commissioner.

Witnesses to Signature of Permittee: ....

R.K. 6/8/64

....

....

Mr. J. C. Watson

ppn. favor
ach for wire
ng nr. M.P. 8
hington Belt Line.

Seattle, Wash.,
April 20, 1926.

0-118

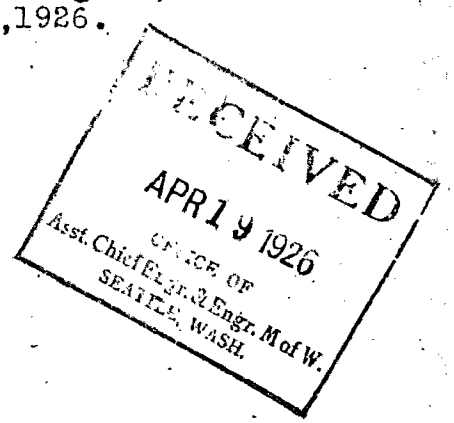
Mr. J. E. Craver,
General Manager,
Building.

I hand you herewith lease application in favor o(b) (6) for electric overhead crossing over tracks at a point 1155' east of M.P. 8 on the Lake Washington Belt Line, to which I have added my recommendation.

MJW:c
encl.

A. R. Ouak

Seattle, Washington,
April 19th, 1926.



Mr. A.R. Cook,
Asst. Chief Engineer,
Seattle, Wash.

Dear Sir:

Herewith lease application in favor of (b) (6) for 100-volt electric light power crossing over our tracks 1155 ft. east of M.P. 8 on the Lake Washington Belt Line.

If this crossing is constructed according to our specifications I do not see any objections permitting the construction.

Yours truly,

E.L. MacKenrott
Asst. Supt. Telegraph.

ELM: C
Enc.

Seattle, Wash
April 17, 1926

Mr. E. L. Mackenroth

I enclose herewith lease application in favor of (b) (6) covering electric light line over our track 1155' east of M. P. 8 on the Lake Washington Belt Line.

If approved, will you please handle in the usual manner.

J R Bartlett
Superintendent

AGENT'S OR ROADMASTER'S REPORT AND RECOMMENDATION

SEATTLE Station, SEATTLE Division, Apr 14 1926

Application is made for permission to occupy the property of the Company as follows:

APR 27 1926

1. Name of applicant: (b) (6) [redacted]
2. Post office address: [redacted]
3. Business of applicant: Seattle

4. If applicant is a corporation, give name of State under laws of which it is incorporated, and principal place of business fixed by its articles of incorporation: Not a corporation

5. Term or kind of lease wanted: Indefinite

6. Purpose for which property is to be used: Applicant wishes to run an electric overhead wire line above track so as to furnish electric lights for her house.

7. Number of similar industries at this station: None

8. Character and dimensions of structure to be erected, if any, and estimated cost: No structure

*9. Description of property desired: Applicant wishes to run this wire over track at a point 1155 ft. east of MP 8 Belt Line 4th Sub Div.

State at or near what station and show compass directions in preference to time card directions

10. Traffic considerations, if any: None

11. If application is for an electric line, give maximum voltage to be carried, also number of wires: 100 volts

12. Recommendation of Agent or Roadmaster: Favorably recommended providing applicant complies with N.P. Rules governing overhead wires.

B H Allman
Agent
Roadmaster

*If description of land desired cannot be given with accuracy by reference to station plat or track profile, a sketch should be made by Agent or Roadmaster with sufficient measurements to identify location and attached hereto, so that accurate description can be made for lease.

RECOMMENDATION OF SUPERINTENDENT.

Approved

Date April 16 1926. J R Barller *Superintendent.*

In space below will be noted the recommendation of such officers as are required under the rules of the Company to pass upon this application, also date forwarded.

A. P. Cook
Asst. Chief Engineer

APPROVED
Gen. Supt.

E. E. Dildine
Superintendent of Telegraph

APPROVED
E L Mackenroth 4/19/26
Asst. Supt. Telegraph

Note: Read the rules and instructions on back.

RULES AND INSTRUCTIONS

1. No leases will be granted for saloons, or for gambling houses, or other immoral purposes; nor as a general rule for retail stores, dwelling houses, hotels, boarding houses, or manufacturing purposes; nor for garages excepting to employes occupying buildings on the Company's right of way; nor for gasoline filling station upon the right of way and station grounds; nor for purposes that will be unusually unsightly or otherwise offensive or dangerous; nor for buildings to be erected within 100 feet of a depot, warehouse, section house or other important structure of the Company; nor for purposes that will constitute an extraordinary fire risk to the property of the Company or its lessees; nor should leases be recommended for the erection of structures that will increase operating danger by obstructing the view, or where the property is likely to be required for railroad purposes within a reasonable time. The standard clearance limits must be strictly observed in any structures erected upon property leased. Safety of operation is paramount to all other considerations, and no occupancy should be permitted which is a menace thereto.

2. Officers passing upon lease applications should consider the traffic and other benefits that will result; the amount of space available for leasing at that point; how the applicant will be served by trackage if such is desired, and whether the lease is objectionable for any of the reasons given in paragraph 1 hereof.

3. All lease applications for occupancy of any character at stations, excepting for grain warehouses and elevators (for which a special form R. W. 114 is printed) should be made on form R. W. 113 by the local agent, or general agent if there is one, and by him forwarded with his recommendation to the Division Superintendent, thereafter to be forwarded as directed in the Standard Rules governing protection and occupancy of right of way and other operating property approved July 1st, 1921. Applications for occupancy between stations or at stations where there are no agents should as a rule be prepared by roadmasters on the same form as are used by agents and forwarded in the same manner. Care must be exercised in filling out applications, whether on printed form or otherwise, to give full and complete information, so that if granted it will not be necessary to write for additional information in order to prepare the lease. Particular points to be covered:

A. Full name and post office address of applicant; if a partnership, the individual names of the partners and also the firm name should be given; if a corporation, the corporate name of the Company and the name of the State under the laws of which it is incorporated should be stated, as well as the post office address of its headquarters.

B. Business of applicant.

C. Traffic considerations, if any.

D. Character and dimensions of structure to be erected, if any, and estimated cost.

E. Full description of land desired, illustrated by sketch if necessary. If sketch is made, actual measurements and points of compass should be shown. This is important and the utmost care should be exercised in making the description and sketch clear and comprehensive.

F. Applications for electric light and power lines must state voltage to be carried.

G. All applications will be assumed to be for indefinite term leases subject to cancellation on short notice unless it is specifically stated in the application that a long term lease is desired.

4. See Rules 14 to 21, inclusive, of Standard Rules governing protection and occupancy, adopted July 1st, 1921, as to how lease applications should be forwarded after reaching the Superintendent.

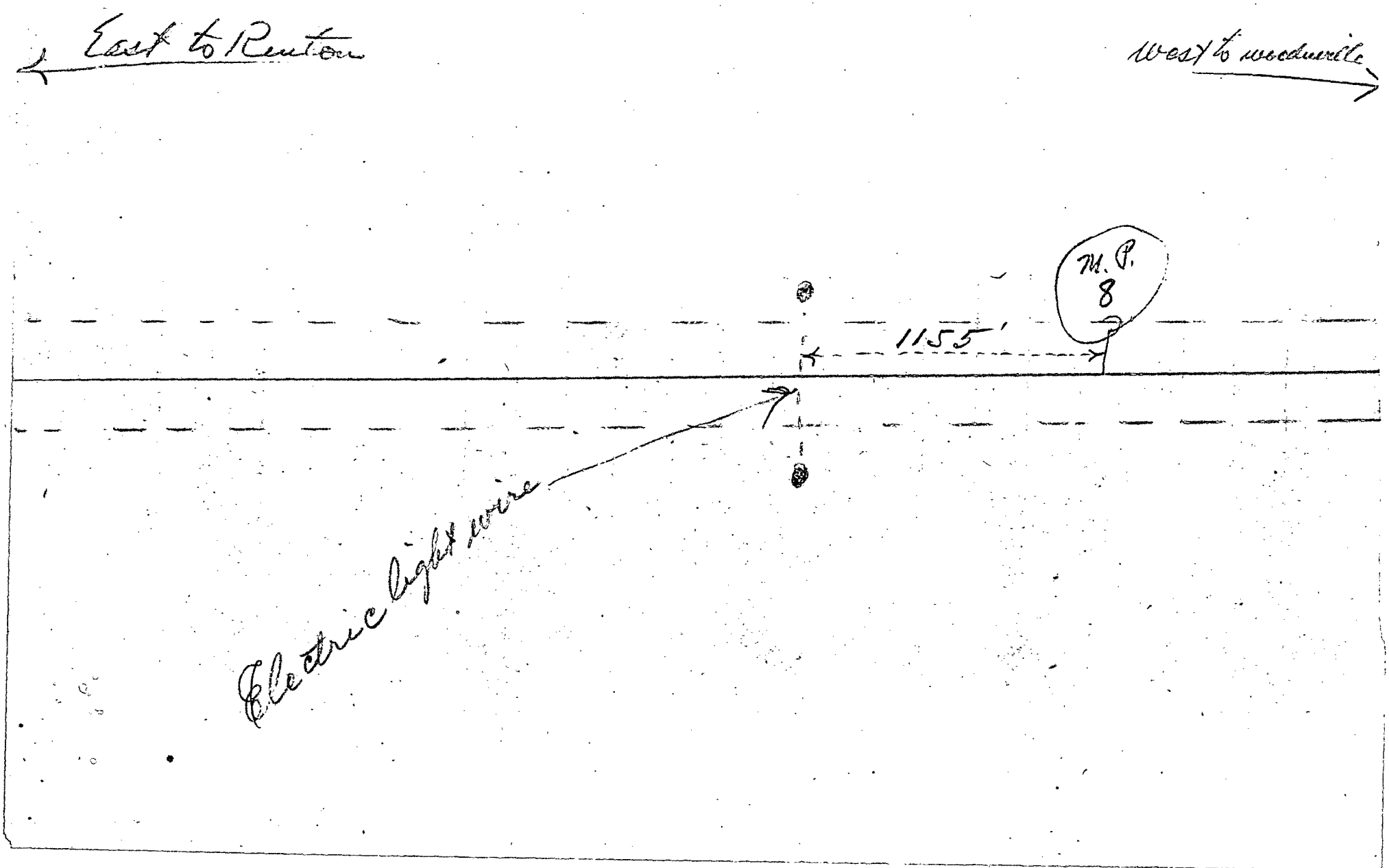
5. Excepting for extraordinary good reasons, which must be set forth in the application or papers accompanying, rental will in all cases be at the established schedule rate.

6. Letters transmitting applications are not necessary, unless it is desired to give information additional to that shown in the application.

7. Lease renewals will be passed upon by the same officers as are designated in the Standard Rules to pass upon original applications of the same character.

March 1st, 1922.

J. L. WATSON,
Right of Way Commissioner.


East to Renton
West to woodinville
M. P.
8
1155'
Electric light wire

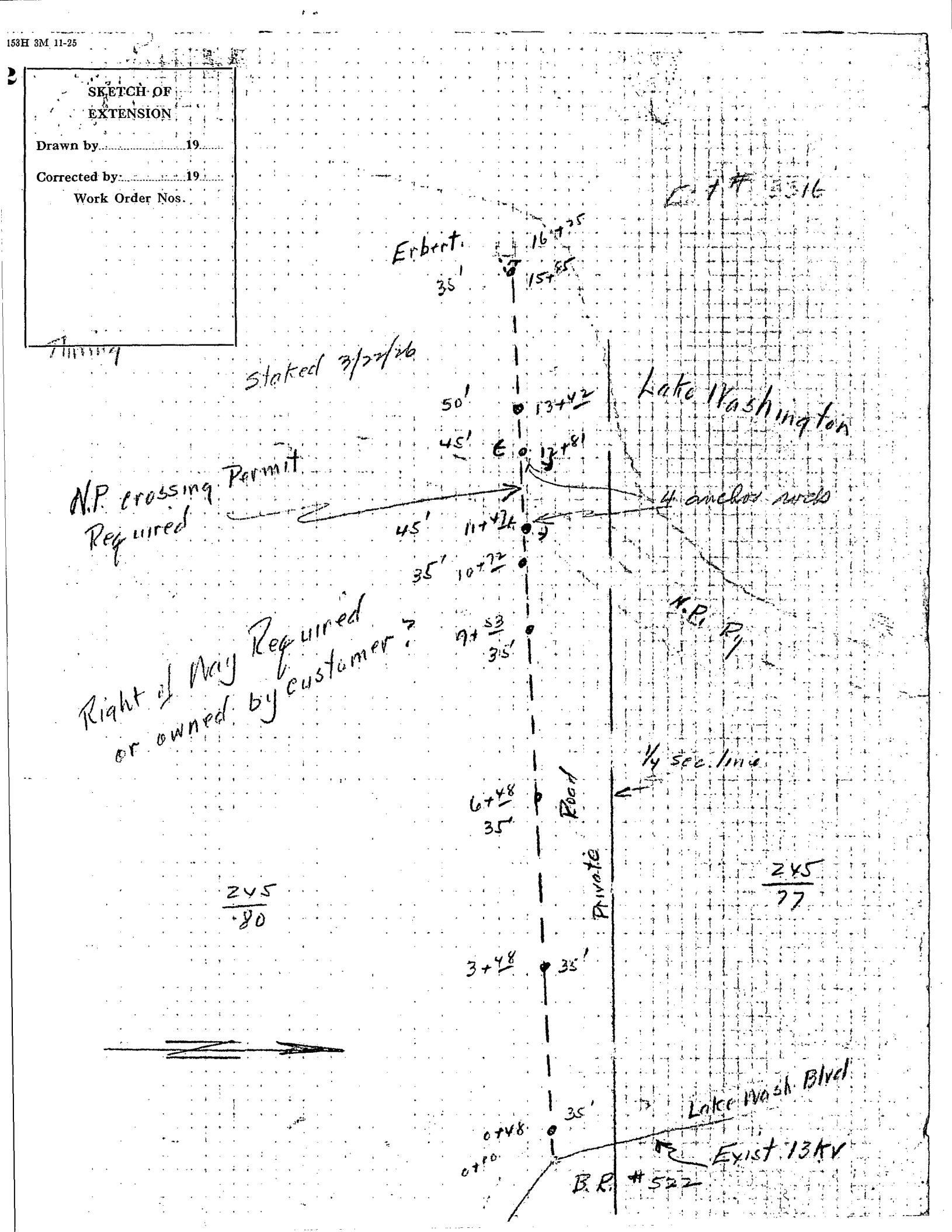
153H 3M 11-25

SKETCH OF EXTENSION

Drawn by ..... 19 .....

Corrected by: ..... 19 .....

Work Order Nos.



NOT JOINT CAR.

PERMANENT PERMIT NO. 43440

CORRESPONDENCE FILE NO. ~~17799~~

Seattle DIVISION.

NAME OF GRANTEE (b) (6) [redacted]

P. O. ADDRESS Seattle, Wn.

LOCATION near Quendall, Wn.

GRANTED FOR Elec Lt. Line Xing

EFFECTIVE May 1-1926

SENT FOR EXECUTION TO Supt 4/30/26 Fwd Supt 5/25/26

REPLACES LEASE NO.

REPLACED BY LEASE NO.

PERMIT NOTED ON Profile M.P. 8 JW 4/30/26

COPIES FURNISHED TO THE FOLLOWING:

GRANTEE to Supt for del

✓ SUPERINTENDENT

✓ CHIEF ENGINEER

✓ ~~AGENT~~ - ROADMASTER

ENGINEER MAINTENANCE OF WAY

✓ ASSISTANT CHIEF ENGINEER

✓ SUPERINTENDENT OF TELEGRAPH

✓ ASST. SUPT. OF TELEGRAPH

✓ DISTRICT ENGINEER

✓ WESTERN R/W AGENT

✓ COMPTROLLER

Noted in Record Book No. 32 Page 111
6/18/1926 by [illegible]

6/11/26

~~Seattle Belt Line~~ Noted on R/W plat # 20 Jm. 6/17/26

Supt

Mr. J. L. Watson:

The permit above referred to has been completed and copies furnished departments interested. Entire file and permit is handed you herewith for deed file.

JWJ